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Patentanmeldung Nr.	Patent application No.	Demande de brevet n°

02079682.7

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R C van Dijk

Anmeldung Nr:
Application no.:   02079682.7
Demande no:

Anmeldetag:
Date of filing: 08.11.02
Date de dépôt:

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Bezeichnung der Erfindung/Title of the invention/Titre de l'invention:
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A recommender and method of providing a recommendation of content therefor

In Anspruch genommene Priorität(en) / Priority(ies) claimed /Priorité(s)
revendiquée(s)
Staat/Tag/Aktenzeichen/State/Date/File no./Pays/Date/Numéro de dépôt:

Internationale Patentklassifikation/International Patent Classification/
Classification internationale des brevets:

H04N7/00

Am Anmeldetag benannte Vertragstaaten/Contracting states designated at date of
filing/Etats contractants désignées lors du dépôt:

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LU MC NL PT SE SK TR

02079682.7
EPA/EPO/OEB Form 1014.2 - 01.2000   7001014

A recommender and method of providing a recommendation of content therefor

Field of the invention

The invention relates to a recommender and a method of providing a recommendation of content therefor and in particular to a recommender suitable for a Private Video Recorder.

Background of the Invention

In recent years, the accessibility to and provision of information and content such as TV programmes, film, music and books etc have increased explosively. The information and content may today be provided from many different sources, and the variety and availability of content has increased substantially.

For example, the number of available television channels in most countries has increased substantially over the last decade, and in many countries, viewers can receive tens or even hundreds of different TV channels. The TV channels are further provided from different broadcasters and sources and are communicated through a variety of media including terrestrial radio broadcasts, cable distribution or satellite broadcasts. Similarly, the number of available radio channels has increased explosively and are provided through different media such as satellite broadcasts, digital terrestrial broadcasts, cable distribution or even through the internet.

As the available content has increased substantially, it has become increasingly difficult for a user to find and select the specific content that he is most interested in. Obtaining information of the total amount of content available and filtering this in order to select a desired content item is a very time consuming and cumbersome process. In addition to finding the appropriate content item, the user further needs to determine from which source and at which time the desired content item is available.

In order to facilitate content selection, and to filter the available content to provide a suitable selection for a given user, recommenders have been developed, which are able to monitor the available content and in response to a user profile recommend content considered specifically suited for the user.

One area where recommenders have been implemented is in Private Video Recorders (PVRs). A typical PVR comprises a hard disk for recording content items such as TV programmes. The PVR further comprises a recommender, which records and recommends TV programmes to the user in accordance with a user profile. The user profile is

5   built up over time to match the users viewing habits, and the profile is specifically generated from specific user input related to the preference for a given programme as well as from detecting which programmes are selected for viewing by the user of the PVR.

Although conventional recommenders may facilitate content selection and provide recommendations, further improvement of the functionality provided would be

10   advantageous.

For example, as the user profile is built up over a significant time, it tends to become relatively static, and modifications and updates can only gradually be incorporated. Furthermore, the user profile is determined in response to the user's preference for selected programmes. However, as the user typically selects from the content items recommended to

15   him, the update information available for the user profile is typically limited to content already recommended. Thus, the content recommendation will tend to become more and more narrow with only content of a limited range being recommended. This further inhibits dynamic changes and thus results in a static and narrow recommendation being provided to the user.

20   Hence, a system for an improved recommender would be advantageous, and especially a system providing increased flexibility and/or dynamic performance would be beneficial.

Summary of the Invention

25   Accordingly, the Invention seeks to provide an improved system for a recommender and/or to mitigate, alleviate or eliminate one or more of the above mentioned disadvantages singly or in any combination.

According to a first aspect of the invention, there is provided a method of providing a recommendation of content to a user comprising the steps of: determining a user

30   preference profile; detecting a content item interest; determining if the content item interest does not correspond to the user preference profile; and if so determining a temporary user preference profile in response to the content item interest; determining if other content items associated with the temporary user preference profile achieve high user preference values and only if so, modifying the user preference profile in response to the temporary user profile.

A user preference profile may thus be updated from a temporary user preference profile. The temporary preference profile may be used to test content items not directly matching the users current preference profile thereby allowing for an increased flexibility and possibility of improved dynamic performance. Specifically, the temporary user

5   preference profile may allow for alternative and/or additional preferences to be tested, and if suitable to be added to the user preference profile. Thus a widening mechanism may be introduced to the user preference profile thereby opposing the narrowing effect caused by a limited recommendation of content for preference evaluation. The content items may for example be TV programmes, video clips, audio clips, radio programmes, music clips,

10   multimedia clips or any other suitable content items. The content item interest may be determined in response to a user behaviour such as a behaviour related to a selection of content items.

       According to a feature of the invention, a number of preference content items associated with the temporary user profile are recommended to the user. Specifically, the

15   suitability of the temporary user profile to the user may be tested by recommending more content items that match the temporary user preference profile. The other content items may thus specifically be content items suggested by the recommender in accordance with the temporary user preference profile. If these content items receive a high user preference, the probability of the user preference profile being updated in response to the temporary user

20   preference profile is increased. The feature thus allows for a reliable, easy implementable and easy to use method of testing the suitability of the temporary user preference profile.

       According to another feature of the invention, the step of determining if the other content items achieve a high user preference value comprises determining a selection rate of the preference content items. The recommender may specifically determine how often

25   a content item matching the temporary user preference profile is selected, and the selection of the content item may be considered a positive preference indication by the user. The selection rate may specifically be determined from how often a matching content item is selected, and/or may be determined in response to for how long the content item is selected. Thus, characteristics such as how quickly after selection the user selects another content item may

30   be used in the determination of a user preference. This provides for an efficient method for determining a user preference.

       According to another feature of the invention, the number of preference content items recommended before deciding whether to modify the user preference profile depends on the selection rate. In particular, the time before a decision is made whether to

modify the user preference profile or to delete the temporary user preference profile may depend on the selection rate. Thus if content items matching the temporary user preference profile are frequently selected, the user preference profile may be updated after relatively few selections. Further, if recommended content items matching the temporary user preference

5   profile are never selected, the temporary user preference profile may be deleted relatively quickly. This allows for a dynamic behaviour well suited to the specific temporary user preference profile.

According to another feature of the invention, the step of determining if the other content items achieve a high user preference value comprises determining a user rating

10   of at least some of the preference content items. This allows for a simple to implement yet very accurate user preference determination.

According to another feature of the invention, the number of preference content items recommended before deciding whether to modify the user preference profile depends on the user rating of at least some of the preference content items. Hence, the

15   dynamic behaviour of the modifications to the user preference profile is adapted in response to the probability of the temporary user preference profile being suited for the user.

According to another feature of the invention, the method further comprises the step of modifying the temporary user preference profile in response to the user preference values of the other content items. Hence, this allows for the option of the user directly

20   affecting the temporary user preference profile such that this may be updated and modified to more accurately reflect a users profile for content preferences.

According to another feature of the invention, the modification of the user preference profile is by including a user preference profile addition. Specifically, the user preference profile may simply be modified by the temporary user preference profile being

25   added to the current user preference profile. For example, the user preference profile may simply add any preferences for content item categories determined in the temporary user preference profile to the preferences stored in the user preference profile. This provides for a simple method of expanding the preferences stored in the user preference profile and thus opposes the inherent narrowing effect of the recommender.

30   According to another feature of the invention, the user preference profile addition is temporary. Specifically, the modification of the user preference profile may not be permanent but may be for a limited duration only. This will allow the user preference profile to adapt to temporary preferences, for example associated with a temporary availability of a

specific category of content. Hence, an improved dynamic performance of the recommender may be achieved.

According to another feature of the invention, a dynamic update characteristic of the user preference profile addition is different from a dynamic update characteristic of the

5   user preference profile. Specifically, the user preference profile may thus comprise different elements having different dynamic performance. This may allow for some preferences to be quickly modified or updated in accordance with a current preference while preserving the accuracy of the long term preferences. Hence, an overall improved dynamic behaviour may be achieved without sacrificing long term accuracy.

10   According to another feature of the invention, the content item interest is detected from a detection of a user selection of a content item. This provides a suitable mechanism for detecting a content item interest.

According to another feature of the invention, the method further comprises the step of recommending the content item for initial selection. Specifically, the temporary

15   user preference profile may be generated from the recommendation and selection of a content item, which does not match the determined user preference profile. This allows for the recommender to test non-matching content items thereby allowing for a widening of the content item preferences such that the user preference profile may be updated to include new preferences.

20   According to another feature of the invention, the recommendation of the content item is in response to an increase in preference values of other users for content items associated with the content item. This allows the preference of other users to be used as an indication that a given content item or category of content items may be applicable to the current user. Hence, it allows the recommender to test if a new popular content item or

25   category of content items will be suitable for the user.

According to another feature of the invention, the method further comprises the step of receiving topic interest information from an external source. Further, the content item interest is detected in response to the topic interest information. This provide for a suitable input for suggesting content item that may be suitable for the user.

30   According to another feature of the invention, the external source comprises at least one source chosen from the group of: a newspaper; a website; and a broadcast source. These sources provide suitable and advantageous sources for generating and distributing topic interest information.

According to a different aspect of the invention, there is provided a
recommender for providing a recommendation of content to a user, the recommender
comprising: a recommender processor for determining a user preference profile; a user
interface controller (107) for detecting a a content item interest; wherein the recommender

5   processor (111) is operable to determine if the content item interest does not correspond to
the user preference profile; and if so to determine a temporary user preference profile in
response to the selected content item; and determine if other content items associated with the
temporary user preference profile achieve high user preference values and only if so,
modifying the user preference profile in response to the temporary user preference profile.

10

Brief Description of the Drawings

An embodiment of the invention will be described, by way of example only,
with reference to the drawings, in which

FIG. 1 is an illustration of a private video recorder comprising a recommender

15   in accordance with an embodiment of the invention; and

FIG. 2 is an illustration of a method of providing a recommendation of content
in accordance with an embodiment of the invention.

Description of Preferred Embodiments

20   The following description focuses on an embodiment of the invention
applicable to a Private Video Recorder (PVR) comprising a recommender. However, it will
be apparent that the invention is not limited to this application but may be applied to many
other applications including recommenders for radio programme content or Internet content.

For clarity and brevity, the description focuses on an embodiment wherein the

25   content item interest is determined in response to a user selection of a content item.

FIG. 1 is an illustration of a private video recorder (PVR) 101 comprising a
recommender in accordance with an embodiment of the invention. The PVR 101 comprises a
content receiver 103. The content receiver 103 receives content items from one or more
suitable content item sources. In the preferred embodiment, the content receiver 103 mainly

30   receives content by way of TV programmes broadcast in a suitable way.

However, in the preferred embodiment, the content receiver is further capable
of receiving content from a plurality of diverse content sources. Thus, the content receiver
receives content items in the form of both video, audio and multimedia clips and
programmes. Specifically, TV programmes are received from terrestrial radio broadcasts as

well as from a digital cable connection. Likewise, radio programmes are received both from

conventional analogue radio transmissions as well as from digital radio broadcasts received

through a cable connection. The content receiver capable of receiving a plurality of content

items from diverse sources may simply be implemented as the combination of a plurality of

5   independent content receiver elements, where each element is dedicated to receiving content

items of a specific nature from a specific source.

The received content items are converted to suitable digital formats and stored

in a content memory 105 together with information associated with the content items.

Specifically, a content item may be received directly in a suitable format, such as an MPEG 2

10   format for a video transmission, and in this case no conversion is required.

The PVR 101 further comprises a user interface 107 for displaying content

items, control information and for receiving user input. Specifically, the user interface 107

comprises a display such as e.g. a video monitor or a TV. The user input is in the preferred

embodiment, received by use of a remote control communicating with the user interface 107.

15   Hence, the user interface is operable to display various information to the user and to receive

user input. Specifically, the user interface may display a list of content items, and a user may

select one of these through a suitable activation of the remote control.

The PVR additionally comprises a content presenter 109, which is coupled to

the content memory 105 and the user interface 107. In response to a selection of a content

20   item, the content presenter 109 is operable to retrieve the stored content from the content

memory 105 and present it to the user via the user interface 107.

Further, the PVR 101 comprises a recommender processor 111 coupled to the

content receiver 103, the content presenter 109, the user interface 107 and possibly the

content memory 105. The recommender processor 111 is operable to generate a user

25   preference profile for a user of the PVR 101.

In the preferred embodiment, the recommender processor 111 detects which

content items are presented by the content presenter 109. It furthermore determines a user

preference for the content items through a specific user preference indication received

through the user interface 107. Additionally or alternatively the user preference indication

30   may be received through indirect measures. These indirect measures include detection of for

example how many times a given content item is watched, whether it is watched in full or

only partly etc.

When the recommender processor 111 detects that a given content item is

presented to the user, it retrieves the associated information from the content memory 105.

The user preference is correlated with the information for the content item, and specifically with the category of the content item, in order to derive information of the user's preference for this category of content item. In this way, the recommender processor 111 builds up knowledge of the user's preferences for different categories and types of content. This

5   knowledge is contained in a user preference profile, and the PVR 101 comprises a user preference profile memory 113 for storing the user preference profile. The user preference profile memory 113 is coupled to the recommender processor 111.

In the preferred embodiment, the PVR 101 is further operable to determine a temporary user preference profile. This temporary user preference profile may be stored in a

10   temporary user preference profile memory 115 coupled to the recommender processor 111.

FIG. 2 is an illustration of a method of providing a recommendation of content in accordance with an embodiment of the invention. The method may be applicable to the PVR of FIG. 1, and will in the following be described with reference to this.

In step 201, a user preference profile is determined. In the preferred

15   embodiment, the user preference profile is determined in response to previous user selections. Hence, specifically a user preference profile is generated when the PVR 101 is first initiated and is then stored in the user preference profile memory 113. The user preference profile is continually updated as the PVR is used, and becomes increasingly accurate and specific as more and more information is determined. The determination of the user preference profile of

20   step 201 may comprise the process of generating a new user preference profile. However, in the preferred embodiment the determination of step 201 comprises the recommender processor 111 determining the user preference profile simply by accessing the information stored in the user preference profile memory 113. Hence, the determination preferably simply consists in retrieving or accessing some or all information of the user preference profile

25   stored in the user preference profile memory 113.

In step 203, it is determined if a new content item has been selected. The step is repeated until a positive detection of a selection occurs. In the preferred embodiment, step 203 is furthermore associated with one or more content items being recommended to the user. Specifically, these content items may comprise a number of content items that match

30   the user's preference profile but will in addition comprise some content items that do not provide a close match to the user's preference profile. These "surprise" suggestions allows the user to be recommended content items that do not match the current user preference profile, and therefore may be used to modify and update the user preference profile to include new preferences.

When a new content item has been selected, the method continues in step 205 wherein it is detected if the selected content corresponds to the user preference profile and specifically in the preferred embodiment, whether it matches the user's current user preference profile. If the selected content item does match the user preference profile, the

5   content presenter 109 proceeds to present the content item to the user and the method returns to step 203.

If the selected content item does not match the user preference profile, the method continues in step 207 wherein a temporary user preference profile is determined in response to the selected content item. Thus a new temporary user preference profile is

10   generated, which in the preferred embodiment is initialised with a positive preference value for the one or more of categories to which the content item belongs. Thus, if a user not normally interested in sport, and therefore with a low preference value for sport in the user preference profile, selects a content item consisting in a TV programme of for example a football match at the Olympic games, the temporary user preference profile may be started

15   with a positive preference value for the categories of Sport, Football and the Olympic Games.

The method continues in step 209 wherein further information is gathered from other content items to further determine the user preference values for the temporary user preference profile. Specifically, in the preferred embodiment, the temporary user preference profile is tested by a number of other content items belonging to the categories of

20   the temporary user preference profile. The user preference values for these other content items are determined and used to determine how suitable the temporary user preference profile is for the user. In addition, the temporary user preference profile is preferably updated and modified in accordance with the determined preference values.

As a specific example, following the selection of the Olympic football match,

25   the recommender processor 111 may through the user interface 107 recommend a number of sports programmes including for example another Olympic football match, a domestic football match and an Olympic Athletics event such as a 100 m sprint. User preference values are determined for these recommendations, and specifically a positive value is associated with the content items that are selected, whereas a negative value is associated with content

30   items that are not selected.

Hence, if the user selects none of the recommended clips, a low overall preference value is achieved by the temporary user preference profile. If all of the recommended clips are selected a high overall preference value is achieved by the temporary user preference profile. If only some of the clips are selected, the temporary user preference

profile is in the preferred embodiment updated accordingly. Hence, if the user selects content items related to two other Olympic events, the temporary user preference profile is changed to reflect a high preference for the Olympic category but a lower preference for the category of football matches. In this way, the temporary user preference profile is further modified to more accurately reflect the new preference of the user.

In the preferred embodiment, many other approaches for determining a preference value is used in addition to the method described above. Specifically, the user interface 107 may receive explicit preference indications from the user and communicate these to the recommender processor 111, which will modify and update the temporary user preference profile accordingly. Additionally or alternatively, other user behaviour may be used as information for determining the preference values including determining how quickly a user moves on to another content item, whether he samples topics from other sources by selecting these sources for short durations and for how long the user selects a given content item.

Hence, in the preferred embodiment, the temporary user preference profile is in step 209 further refined and tested by recommending a number of preference content items associated with the temporary user profile.

Step 209 is followed by step 211 wherein it is determined if the temporary user preference profile has achieved high user preference values. If high preference values are achieved, the method continues in step 213 by modifying the user preference profile in response to the temporary user profile. If high preference values are not achieved, the method continues in step 215 by deleting the user preference profile.

In the preferred embodiment, the duration and/or number of other content items recommended or selected before a decision is made on whether to delete the temporary user preference profile or to update the user preference profile depends on the preference values obtained. Specifically, the number of preference content items recommended before deciding whether to modify the user preference profile depends on the selection rate or a user rating of at least some of the preference content items. Hence, if most of the content items recommended in accordance with the temporary user preference profile are selected, and are given high user ratings, the user preference profile is modified very soon. However, if none or only a few of the content items recommended in accordance with the temporary user preference profile are selected, and these are given low user ratings, the user preference profile will soon be deleted. In contrast, if the results are less conclusive, for example because a relatively high number of other content items are selected but these are given low

user ratings, the test duration is extended and more content items matching the temporary user preference profile are recommended in order to further test the temporary user preference profile.

In the preferred embodiment, the modification of the user preference profile is by including a user preference profile addition. Thus the original user preference profile is augmented by inclusion of the information from the temporary user preference profile. Specifically, the user preference profile may be modified by the categories of the temporary user preference profile having high preference values being added to the user preference profile. Thus, in the specific example, if the temporary user preference profile indicates that the content item category relating to the Olympic Games has a high preference value this category is added to the user preference profile.

In some embodiments, the user preference profile addition may be temporary. Thus the temporary user preference profile is not necessarily integrated with the user preference profile but may be a separable addendum that can be deleted at a later date. Hence, this allows for a temporary interest or preference to be taken into account and used by the recommender without causing a lasting change to the user preference profile. For example, the user preference profile may be updated by the inclusion of a high preference for content item related to the Olympic Games. However, when the Olympic Games finish, this category may be deleted.

In the preferred embodiment, a dynamic update characteristic of the user preference profile addition is different from a dynamic update characteristic of the user preference profile. Thus in this embodiment, the update rate and modification rate for the user preference profile is typically significantly slower than for the user preference profile addition. Therefore, it will require a more significant and substantial change in behaviour to modify the user preference profile whereas the user preference profile addition will be updated and modified by much fewer preference value inputs. For example, the user preference profile may have been built up over years of monitoring user behaviour, and will therefore very accurately reflect the users average preferences. In order to retain this information and accuracy, very significant preference values for a high number of content items are required for a substantial change to be made to the user preference profile. However, the user preference profile addition may have been based on only a few days or weeks information, and therefore reflect current deviations from the average preferences of the user. In order to follow the variations in the user's preferences, much fewer content items are required for significant changes to be made to the user preference profile addition.

In the specific example, a user may not be interested in sport in general but be interested in following currently ongoing Olympic Games. The described embodiment will allow for the exception to the average low preference for sport to be detected, and will result in a temporary user preference profile and consequent user preference profile addition.

5   Hence, within perhaps a few days, the recommender will have detected and updated the recommendations to include content items related to the Olympic Games. When the Olympic Games finish, no content items in this category will be selected, and due to the high update rate of the user preference profile addition, the preference value for sport events is quickly returned to the normal levels. Hence, the short term preference variations may be tracked

10   without impacting the long term average preference profile.

It will be appreciated that any content item interest not closely matching the user preference profile may be used to initiate the temporary user preference profile in the preferred embodiment. However, preferably a recommendation of one or more content items is made in response to an increase in preference values of other users for content items

15   associated with these content items. Hence, preferably the behaviour of other users is used to recommend content items to the user which may result in a temporary user preference profile. Specifically, currently popular content items and categories of content items may be determined and detected and used to provide recommendations to the user. For example, it may be detected that there is a general increase in selection and preference values for sport

20   events and that these specifically relate to recently begun Olympic Games. In response, content item related to the Olympic Games may initially be recommended to the user, and if selected, a temporary user preference profile may be initiated in response.

It will be apparent that some communication of information related to the behaviour of other users is required. This may be provided in any suitable way and

25   specifically it may be included as data in the received broadcast transmissions. Likewise, any suitable method for detecting the behaviour and preference values of different users may be used. In some embodiments, a number of PVRs may be connected to a central communication unit, which receives and processes selection information in order to generate the information of the behaviour of a plurality of users.

30   Additionally or alternatively, the recommender may receive information related to content item interests from an external source. For example, the recommender may directly receive information of topics that are generally of interest to many users. This information may be direct such as information specifically generated for the purpose by a central unit. The user of the PVR may thus have a subscription entitling him to receive

information related to content items, including topic interest information indicating e.g. issues or events of current high general interest. In other embodiments, the topic interest information may be more indirect and may be derived by the recommender from indirect information. This may include information from e.g. newspapers where the headlines can be

5   analysed to provide indications of topics of current high general interest. Alternatively or additionally, one or more web sites may be accessed and analysed for indications of high interest topics. In some embodiments, topic interest information may be comprised in or derived from a broadcast. Specifically, the information may be included as data embedded in the content item broadcast signals.

10   The invention can be implemented in any suitable form including hardware, software, firmware or any combination of these. However, preferably, the invention is implemented as computer software running on one or more data processors and/or digital signal processors. The elements and components of an embodiment of the invention may be physically, functionally and logically implemented in any suitable way. Indeed the

15   functionality may be implemented in a single unit, in a plurality of units or as part of other functional units. As such, the invention may be implemented in a single unit or may be physically and functionally distributed between different units and processors.

        Although the present invention has been described in connection with the preferred embodiment, it is not intended to be limited to the specific form set forth herein.

20   Rather, the scope of the present invention is limited only by the accompanying claims.

CLAIMS:

1.   A method of providing a recommendation of content to a user comprising the steps of:

determining a user preference profile;

detecting a content item interest;

5   determining if the content item interest does not correspond to the user preference profile; and if so

determining a temporary user preference profile in response to the content item interest;

determining if other content items associated with the temporary user

10   preference profile achieve high user preference values and only if so, modifying the user preference profile in response to the temporary user preference profile.

2.   A method as claimed in claim 1 wherein a number of preference content items associated with the temporary user profile are recommended to the user.

15

3.   A method as claimed in claim 2 wherein the step of determining if the other content items achieves a high user preference value comprises determining a selection rate of the preference content items.

20   4.   A method as claimed in claim 3 wherein the number of preference content items recommended before deciding whether to modify the user preference profile depends on the selection rate.

5.   A method as claimed in claim 2 wherein the step of determining if the other

25   content items achieves a high user preference value comprises determining a user rating of at least some of the preference content items.

6.   A method as claimed in claim 5 wherein the number of preference content items recommended before deciding whether to modify the user preference profile depends on the user rating of at least some of the preference content items.

5   7.   A method as claimed in claim 1 further comprising the step of modifying the temporary user preference profile in response to the user preference values of the other content items

8.   A method as claimed in claim 1 wherein the modification of the user
10   preference profile is by including a user preference profile addition.

9.   A method as claimed in claim 8 wherein the user preference profile addition is temporary.

15   10.   A method as claimed in claim 8 wherein a dynamic update characteristic of the user preference profile addition is different from a dynamic update characteristic of the user preference profile.

11.   A method as claimed in claim 1 wherein the content item interest is detected
20   from a detection of a user selection of a content item.

12.   A method as claimed in claim 11 further comprising the step of recommending the content item for initial selection.

25   13.   A method as claimed in claim 12 wherein the recommendation of the content item is in response to an increase in preference values of other users for content items associated with the content item.

14.   A method as claimed in claim 1 further comprising the step of receiving topic
30   interest information from an external source and wherein the content item interest is detected in response to the topic interest information.

15.   A method as claimed in claim 13 wherein the external source comprises at least one source chosen from the group of:

a. a newspaper;

b. a website; and

c. a broadcast source.

5   16.   A computer program enabling the carrying out of a method according to any of the previous claims.

17.   A recommender for providing a recommendation of content to a user, the recommender comprising:

10   a recommender processor for determining a user preference profile;

user interface controller for detecting a content item interest;

herein the recommender processor is operable to

etermine if the content item interest does not correspond to the user preference profile; and if so to

15   determine a temporary user preference profile in response to the selected content item; and

determine if other content items associated with the temporary user preference profile achieve high user preference values and only if so, modifying the user preference profile in response to the temporary user preference profile.

20

18.   A private video recorder (101) comprising a recommender as claimed in claim 16.

17   30.10.2002

ABSTRACT:

EPO – DG 1

– 8. 11. 2002

(55)

The invention relates to a recommender for recommending content to a user. The recommender comprises a recommender processor (111) which performs the steps of determining (201) a user preference profile and determining (205 if a content item interest does not correspond to the user preference profile. If the content item interest does not match

5   the user preference profile, a temporary user preference profile is generated (207) in response to the content item. The recommender processor (111) through a user interface (107) then tests (209) the temporary user preference profile by recommending a plurality of other content items, and determining user preference values for these. If the preference value for the temporary user preference profile is high (211), the user preference profile is updated

10   (213) accordingly. Otherwise the temporary user preference profile is deleted (215). The update to the user preference profile may be temporary and have a higher update rate, thereby allowing the recommender to track temporary variations in user preferences. The recommender is particularly applicable to a Private Video Recorder (101).
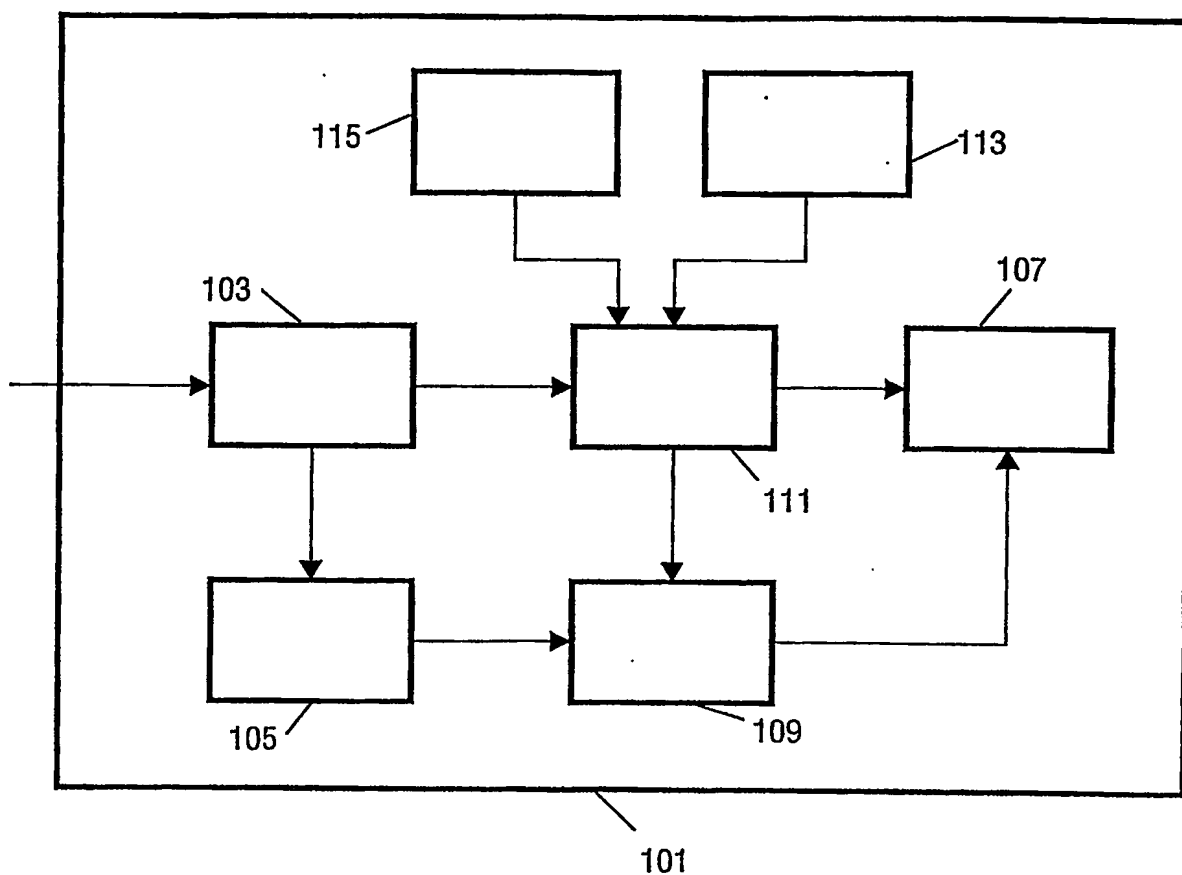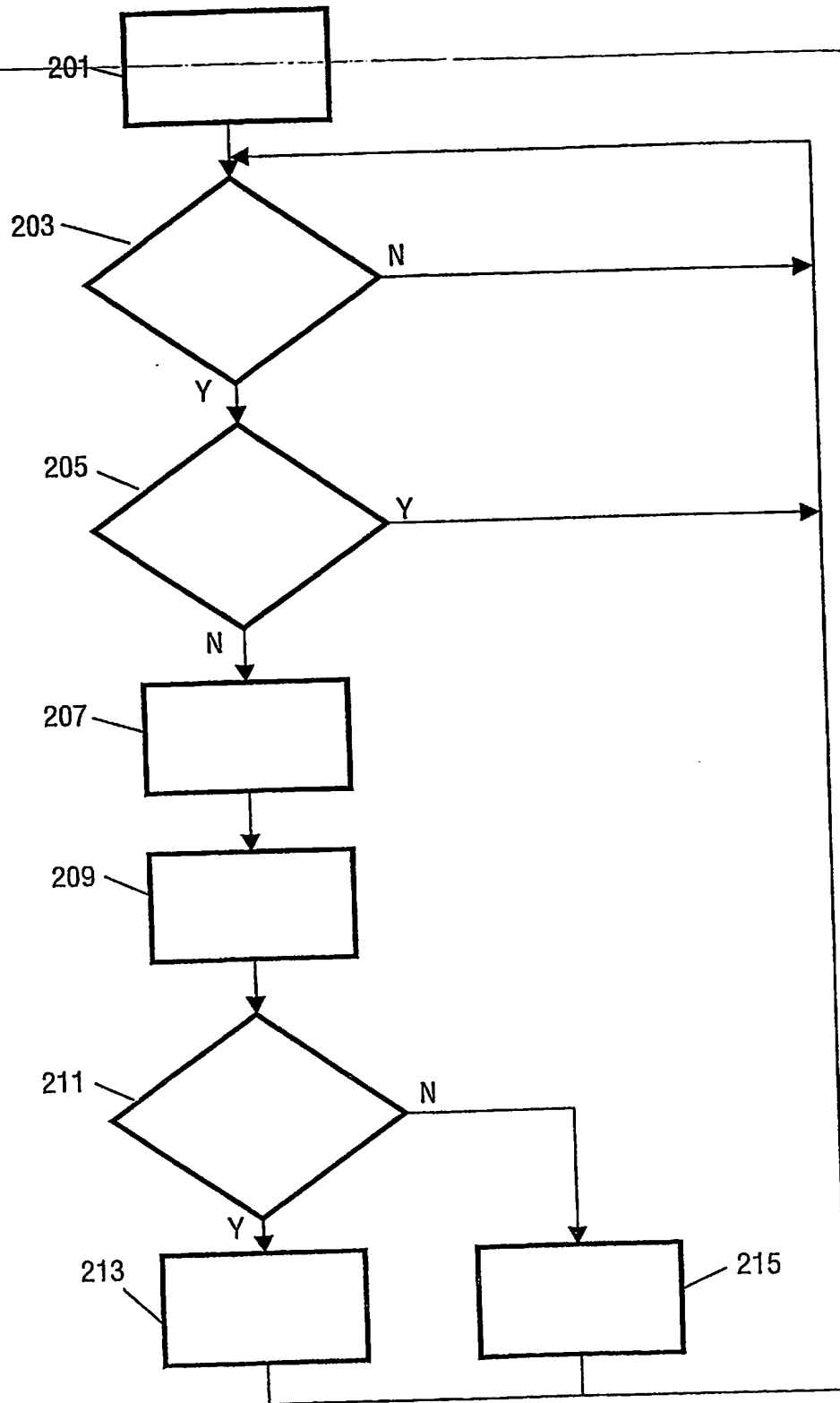
15   FIG. 2

FIG.1

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FIG.2